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With authors Compliments

PRELIMINARY NOTE ON A NEW MEDICINAL PLANT AND ITS ALKALOID.

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SOME time since, I received from the Smithsonian Institute a letter containing some small, red beans, which had been sent there by Mr. Edmund Bellinger, Sr., of Texas. The beans were irregularly oval or roundish, about one-third of an inch in length, and had a slightly bitter taste, with an after-feeling of numbness, when chewed. Mr. Bellinger stated that they were occasionally used by the Indians in the neighborhood of San Antonio, Southwestern Texas, as an intoxicant; that a half bean would produce delirious exhilaration, followed by sleep which lasts two or three days; and that it was asserted that a whole bean would kill a man.

Mr. Bellinger has been kind enough to send me several small packages of the bean. It is the very imperfect results of this study which I now publish, hoping before many

months to be able to lay before the profession an exhaustive report upon the drug or poison.

With the beans, there were in the first letter of Mr. Bellinger a few broken flowers. On submitting these to Dr. Rothrock, Professor of Botany in the University of Pennsylvania, he, after very little hesitation, pronounced them to belong to the genus Sophora; and comparison with the specimens of Sophora speciosa of Bentham, in his herbarium, left very little doubt that the beans are yielded by that tree.

I have made a partial chemical study of them, and have obtained in several ways, but in very small amount, an organic principle, which is exceedingly active as a poison, the minutest speck producing in two minutes almost entire paralysis in the frog. One-twentieth of a grain of a very impure specimen produced in a half-grown cat deep sleep lasting many hours.

As this substance is not soluble in water, but is soluble in acidulated water and is precipitated by alkalies, and as it dissolves freely in ether, imparting to it a decidedly alkaline reaction, it must be looked upon as an alkaloid. I would propose for it the name of *Sophoria*.

I obtained it of a grayish-white color, but did not succeed in crystallizing either it or its acetate. Its reactions, as far as I have examined them, are as follows (the

tests were made by placing a speck of the alkaloid upon a porcelain plate and applying the reagent).

With concentrated sulphuric acid, no color.

With chromic acid and concentrated sulphuric acid, a dirty, deep purple, passing rapidly into bright green, then into bluish and finally into yellowish brown.

With tincture of the chloride of iron, a deep, almost blood red, after a time acquiring an orange tint.

With nitric acid, no color.

With chromic and nitric acid, a very faint, evanescent reddish color.

With nitromuriatic acid, a dirty reddish brown.

From the solution of its acetate, compound tincture of iodine throws down a yellowish precipitate.

I have made physiological experiments with an alcoholic extract of the bean upon the lower animals sufficient to outline its general action.

In *frogs* it produces a rapid loss of reflex activity and power of voluntary movement. The loss of power is not due to any action upon the motor nerve-trunks, as after death these were found to preserve their normal susceptibility. Further, tying the sciatic artery upon one or both sides of the frog did not influence the action of the drug upon either voluntary or reflex movements. This would indicate that the poison is a spinal sedative and has little or no effect upon either motor or sensitive

nerves. In all cases the heart continued beating long after the cessation of respiration.

Upon *mammals* the effect varies somewhat in accordance with the dose. An amount of the extract estimated at two grains (?) produced, in a full grown tom-cat, in one minute marked weakness in hind legs, in two minutes inability to stand, with evident effect upon the respiration, in three minutes convulsive movements with loss of consciousness, continuing with ever-increasing embarrassment of the breathing for three minutes, when all attempts at respiration ceased. The heart kept on beating for one and a half minutes longer. The pupils were unaffected at first, afterwards dilated.

In small quantity the extract produces in the cat vomiting, great muscular weakness, profound quietude, and deep sleep, lasting some hours, and ending in recovery. In dogs the symptoms were similar to those noted in cats. Death always took place through the respiration. In a single cardiac experiment the drug had no decided effect upon the blood-pressure until towards death, but appeared to accelerate the cardiac beat.